

DOCUMENT RESUME

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AUTHOR Warpinski, Robert
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ABSTRACT

Presented in this teacher's guide for grades 7-12 are lesson plans and ideas for integrating industrial arts (drafting, woodworking, and metals) and environmental education. Each lesson originates with a fundamental concept pertaining to the environment and states, in addition, its discipline area, subject area, and problem orientation. Following this, behavioral objectives and suggested learning experiences are outlined. Behavioral objectives include cognitive and affective objectives and skills to be learned, while learning experiences list student-centered in-class activities and outside resource and community activities. Space is provided for teachers to note resource and reference materials--publications, audio-visual aids, and community resources. The guides are supplementary in nature and the lessons or episodes are designed to be placed in existing course content at appropriate times. This work was prepared under an ESEA Title III contract for Project I-C-E (Instruction-Curriculum-Environment). (BL)

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Project I - C - E

INSTRUCTION - CURRICULUM - ENVIRONMENT

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A SUPPLEMENTARY PROGRAM FOR ENVIRONMENTAL EDUCATION

DISCIPLINE AREA Industrial Arts GRADE 7-12

1. Drafting

~~2. Woodworking~~

3. Metals

Produced under Title III E.S.E.A.
PROJECT I-C-E
Serving Schools in CESA's 3-8-9
1927 Main Street
Green Bay, Wisconsin 54301
(414) 432-4338
(after Dec. 1, 1972 - 468-7464)

Robert Warpinski,
Robert Kellner, A
George Howlett, E

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MANUAL FOR ENVIRONMENTAL EDUCATION

Visual Arts GRADE 7-12

rafting

woodworking

sculptals

II E.S.E.A.

A's 3-8-9

54301

(468-7464)

Robert Warpinski, Director
Robert Kellner, Asst. Director
George Howlett, EE Specialist

PREFACE

"Oikos" for house is the Greek origin of the term "ecology". studies our house--whatever or wherever it may be. Like an umbrella expand or contract to fit many ranges--natural and man-made. We environments, our many "houses" if we omit rancor and cite long complexities. Our "oikos" uses the insights of all subjects. T multidisciplinary program like ours necessarily results. Also, a long time, our program ranges K thru 12. The environment mirror values. These values have their origin in the "oikos" of our common minds. Let us become masters of our house by replacing the Greek with "Know thyself and thine house."

1. Written and designed by your fellow teachers, this guide is s to fit appropriately into existing, logical course content.
2. Each page or episode offers suggestions. Knowing your student to adapt or adopt. Limitless chances are here for your experience. Many episodes are self contained, some open-minded, still others developed over a few days.
3. Try these episodes, but please pre-plan. Why? Simply, no guide and no curriculum will work unless viewed in the context of your world.
4. React to this guide with scratch ideas and notes on the episodes.
5. After using an episode, fill out the attached evaluation form. Duplicate, or request more of these forms. Send them singly. We sincerely want your reactions or suggestions--negative and evaluations are the key in telling us "what works" and in aiding the guides.

----- TERMS AND ABBREVIATIONS

ICE RMC is Project ICE Resource Materials Center serving all public school districts in CESA 3, 8, and 9. Check the Project ICE Bibliography resources. Our address and phone number is on this guide's cover or call us for any materials or help.

BAVI is Bureau of Audio Visual Instruction, 1327 University Avenue, Madison, Wisconsin 53701 (Phone: 608-262-1644).

Cognitive means a measurable mental skill, ability, or process.
Affective refers to student attitudes, values, and feelings.

PREFACE

the Greek origin of the term "ecology". Environmental education wherever or wherever it may be. Like an umbrella, our house can fit many ranges--natural and man-made. We can add quality to our "houses" if we omit rancor and cite long range gains, costs, and "oikos" uses the insights of all subjects. Thus, a rational, positive program like ours necessarily results. Also, since attitudes grow over time, grades K thru 12. The environment mirrors our attitudes or have their origin in the "oikos" of our collective and individual "houses" of our house by replacing the Greek adage of "Know thyself" with "Know thyne house."

and by your fellow teachers, this guide is supplementary in nature--it fits into existing, logical course content.

It offers suggestions. Knowing your students best, you decide what to do. Limitless chances are here for your experimentation and usage. Some are self contained, some open-minded, still others can be changed or added over time.

but please pre-plan. Why? Simply, no guide has all the answers, and it will work unless viewed in the context of your students.

Start with scratch ideas and notes on the episode pages. Then, fill out the attached evaluation form in the back. Use, and modify, as many of these forms. Send them singly or collectively to us. We will use your reactions or suggestions--negative and positive. Your key in telling us "what works" and in aiding our revisions of

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Project ICE Resource Materials Center serving all public and non-public schools in grades SA 3, 8, and 9. Check the Project ICE Bibliography of available materials and phone number is on this guide's cover. Feel free to write for materials or help.

Ohio Visual Instruction, 1327 University Avenue, P. C. Box 2093, Columbus, Ohio 43210 (Phone: 608-262-1644).

measurable mental skill, ability, or process based on factual data. We are interested in student attitudes, values, and feelings.

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CESA #3

D. C. Aderhold, Bonduel
 John Anderson, Peshtigo
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 R. A. Dirks, Gillett
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 LeRoy Gerl, Oconto
 Karen Grunwald, St. James (L)
 William Harper, Lena
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 Arthur Schelk, Suring
 Peter Skroch, Oconto Falls
 David Soltesz, Crivitz
 Bill Stillion, Shawano
 Cathy Warnack, White Lake

Consultants

CESA #3

Dr. Richard Presnell,
 Univ. of Wisc.-Greer Bay

CESA #8

Dr. James Marks,
 Lawrence University

CESA #9

Dr. Charles Peterson,
 St. Norbert College

CESA #8

Mary Anders, Winneconne
 Robert Becker, Fox Valley (L)
 Mary Chriss, Hortonville
 Cliff Christensen, Winneconne
 Kenneth Couillard, Hortonville
 Raymond Emerich, Hortonville
 Mike Ercegovac, Winneconne
 Dona Geeding, Menasha
 Donald Hale, Winneconne
 James Huss, Freedom
 Sister Lois Jonet, Holy Angels
 Kenneth Kappell, St. Aloysius
 Kenneth Keliher, Appleton
 Everett Klinzing, New London
 Fred Krueger, Oshkosh
 Jim Krueger, Winneconne
 Mae Rose LaPointe, St. John High
 Rosemarie Lauer, Hortonville
 Robert Lee, Neenah
 Harold Lindhorst, St. Martin (L)
 Dennis Lord, Little Wolf
 Robert Meyer, Neenah
 Arnold Neuzil, Shiocton
 James Nuthals, Lourdes
 Connie Peterson, St. Martin (L)
 Rosemary Rafath, Clintonville
 Mark Reddel, St. Martin (L)
 Gladys Roland, Little Wolf
 Kathryn Rowe, Appleton
 Mary Margaret Sauer, Menasha
 Edwin Schaefer, Kaukauna
 Lee Smoll, Little Chute
 Doris Stehr, Mt. Calvary (L)
 Ginger Stuvetraa, Oshkosh
 Richard Switzer, Little Chute
 Tim Van Susteren, Holy Name
 Lila Wertsch, St. Margaret Mary
 Warren Wolf, Kimberly
 Gery Farrell, Menasha

Peter Biolo
 Lee Clasen,
 Kathryn Col
 Merle Colbur
 Sara Curtis
 Duane DeLor
 Roberta Dix
 Janet Elinge
 Phyllis Ell
 Keith Fawce
 Jack Giachi
 Mike Gleffe
 Herbert Har
 Gary Heil,
 Nannette Ho
 Joseph Huce
 Catherine H
 DeAnna John
 Kris Karpin
 Mel Kasen,
 Jack Koivis
 Sister Mary
 Ellen Lotz,
 Judilyn McGo
 Priscilla Me
 C. L. Paquet
 William Rob
 Roger Roznov
 Jan Serrahn
 Calvin Siega
 Mary Smith,
 Carol Trimbe
 Mary Wadzins

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CESA #8

Anders, Winneconne
Becker, Fox Valley (L)
Chriss, Hortonville
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Ch Couillard, Hortonville
and Emerich, Hortonville
Ercegovac, Winneconne
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Hale, Winneconne
Huss, Freedom
Lois Jonet, Holy Angels
Kappell, St. Aloysius
Keliher, Appleton
Klinzing, New London
Krueger, Oshkosh
Kueger, Winneconne
Lapointe, St. John High
Lauer, Hortonville
Lee, Neenah
Lindhorst, St. Martin (L)
Lord, Little Wolf
Meyer, Neenah
Neuzil, Shiocton
Nuthals, Lourdes
Peterson, St. Martin (L)
Rafath, Clintonville
Reddel, St. Martin (L)
Roland, Little Wolf
Rowe, Appleton
Margaret Sauer, Menasha
Schaefer, Kaukauna
Toll, Little Chute
Stehr, Mt. Calvary (L)
Stuветraа, Oshkosh
Switzer, Little Chute
Susteren, Holy Name
Tertsch, St. Margaret Mary
Wolf, Kimberly
Arrell, Menasha

CESA #9

Peter Biolo, West DePere
Lee Clasen, Lux.-Casco
Kathryn Colburn, Algoma
Merle Colburn, Algoma
Sara Curtis, Green Bay
Duane DeLorme, Green Bay
Roberta Dix, St. Joseph Acad.
Janet Elinger, Ashwaubenon
Phyllis Ellefson, Wash. Isle.
Keith Fawcett, West DePere
Jack Giachino, Seymour
Mike Gleffe, St. Matthews
Herbert Hardt, Gibraltar
Gary Heil, Denmark
Nannette Hoppe, How.-Suam.
Joseph Hucek, Pulaski
Catherine Huppert, DePere
DeAnna Johnson, Denmark
Kris Karpinen, West DePere
Mel Kasen, Gibraltar
Jack Koivisto, Green Bay
Sister Mary Alyce, Cathedral
Ellen Lotz, West DePere
Judilyn McGowan, Green Bay
Priscilla Mereness, Wrightstown
C. L. Paquet, Denmark
William Roberts, Sturgeon Bay
Roger Roznowski, Southern Door
Jan Serrahn, Sevastopol
Calvin Siegrist, How.-Suam.
Mary Smith, Green Bay
Carol Trimberger, Kewaunee
Mary Wadzinski, How.-Suam.

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I. Energy from the sun, the basic source of all energy, is converted through plant photosynthesis into a form all living things can use for life processes.

Discipline Area Industrial
Subject Drafting
Problem Orientation How is related to the Diazo P

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
<p><u>Cognitive:</u> The student will be able to produce a quality Diazo Print-- properly exposed.</p> <p><u>Affective:</u> The student will understand the importance of original's overall quality and exposure time to print development.</p> <p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Line weight quality. 2. Operation of Diazo Machine. 3. Overall neatness 4. Selection of Diazo reproduction materials (if more than one are used) 	<p>I. Student-Centered in class activity</p> <ol style="list-style-type: none"> A. Demonstrate need for translucent original-- Run print using opaque and translucent original. Compare results. B. Show film. C. Make print with Sun Frame method. D. Make print with Diazo process. E. Have students compare and discuss process and results. Advantages and disadvantages F. Point out Diazo Process is controlled Sun energy. G. Develop bulletin board for trouble shooting Diazo prints (If this happened--you did this wrong) H. List other "Sun Energy" uses <p>II.</p>

the basic source
derived through Discipline Area Industrial Arts
into a form Subject Drafting
use for life Problem Orientation How Sun Energy Grade 7-12
is related to the Diazo Process

SUGGESTED LEARNING EXPERIENCES

	I. Student-Centered in class activity	II. Outside Resource and Community Activities
ance	A. Demonstrate need for translucent original-- Run print using opaque and translucent original. Compare results. B. Show film. C. Make print with Sun Frame method. D. Make print with Diazo process. E. Have students compare and discuss process and results. Advantages and disadvantages F. Point out Diazo Process is controlled Sun energy. G. Develop bulletin board for trouble shooting Diazo prints (If this happened-you did this wrong) H. List other "Sun Energy" uses	A. Visit commercial blue print operation.
ted)		

Resource and Reference Materials

Continued and Additional Suggested I

Publications:

Industrial Arts Drafting,
Walker-Ilevyak, Goodheart-
Willcox Co.
Drafting Technical Comm.,
Lawrence S. Wright,
McKnight & McKnight

Audio-Visual:

Walt Disney's "The Mystery
of The Cosmic Rays."

Community:

Materials Continued and Additional Suggested Learning Experiences

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C2 All living organisms interact
among themselves and their
environment, forming an intricate
unit called an ecosystem.

Discipline Area Industrial
 Subject Drafting
 Problem Orientation Clean-

ESEA Title III
 Project I-C-E
 -59-70-0135-2

BEHAVIORAL OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

Cognitive: The student will clean-up when the period arrives, and not only do his responsibility but also check overall results.
Affective: The student will understand all living systems interact among themselves and their environment, realizing clean-up is a combined effort, not an effort by an individual.

- I. Student-Centered in class activity.
- A. Let clean-up go for one day.
 - B. Allow students to work 2nd day in messy area with dirty equipment.
 - C. Evaluate on 3rd day the need for clean-up and relate it to the shop production and environment.
 - D. Organize schedule of duties and responsibilities stressing teamwork.
 - E. Discuss and compare results of clean-up versus no clean-up, and discuss group interaction as it relates to clean-up.

II. Outcomes
 Co
 A.
 B.

- Skill to be Learned**
- A. Cooperation
 - B. Responsibility
 - C. Benefits of clean-up.
 - 1. Neater drawings.
 - 2. Equipment in proper place.
 - 3. Better working atmosphere.
 - 4. Safer place to work.

Systems interact

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Discipline Area Industrial Arts

Subject Drafting

Problem Orientation Clean-Up Grade 7-12

PIVES

SUGGESTED LEARNING EXPERIENCES

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- I. Student-Centered in class activity.
 - A. Let clean-up go for one day.
 - B. Allow students to work 2nd day in messy area with dirty equipment.
 - C. Evaluate on 3rd day the need for clean-up and relate it to the shop production and environment.
 - D. Organize schedule of duties and responsibilities stressing teamwork.
 - E. Discuss and compare results of clean-up versus no clean-up, and discuss group interaction as it relates to clean-up.

- ii. Outside Resource and Community Activities
 - A. Field trip to local manufacturing area to view practical applications and advantages of neatness and cleanliness.
 - B. Presentation by industrial commission representative on safety and production as related to neatness and teamwork.

arni Continued and Additional Suggested Learning Experiences

(on't from E)

Develop methods of making clean-up responsibility more efficient.

Develop list on where else a team clean-up effort would be beneficial.

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3. Environmental factors are limiting
on the numbers of organisms living Discipline Area
within their influence, thus, each Subject
environment has a carrying capacity. Problem Orienta

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED I
<p><u>Cognitive:</u> Students will be able to select and or design joint (s) that best suits the job, (Appearance, strength, ease of making, etc.)</p> <p><u>Affective:</u> The student will understand how grain, materials, fasteners, fit affect joint quality.</p>	<p>I. Student-Centered in class activity</p> <p>A. Have students design simple joints for strength and or appearance.</p> <p>B. Develop test for joint around available equipment, test for:</p> <ol style="list-style-type: none"> 1. Strength <ol style="list-style-type: none"> A. Shear B. Stress C. Compression D. Tensile 2. Appearance (Pure value judge) 3. Ease of making & cation <p>C. Incorporate joints in project drawing.</p> <p>D. Bean bag discussion "Draw parallels between joint breakdown and ecosystem breakdown. (i.e. Poorly constructed neglected joint breaks under stress, as ecosystem does when congested, and neglected.</p>
<p><u>Skills to be Learned</u> <u>Joint use and design</u></p> <ol style="list-style-type: none"> 1. Material strength 2. Joint use <ol style="list-style-type: none"> A. Inside-Outside B. Structural Appearance 3. Ease of construction. 	

l factors are limiting

f organisms living Discipline Area Industrial Arts

fluence, thus, each Subject Drafting

a carrying capacity. Problem Orientation Joint Design & Carrying Capacity Grade 7-12

ACTIVES

SUGGESTED LEARNING EXPERIENCES

ACTIVES	SUGGESTED LEARNING EXPERIENCES	
ct (s) job, a, t will mater- affect	<p>I. Student-Centered in class activity</p> <p>A. Have students design simple joints for strength and or appearance.</p> <p>B. Develop test for joints around available equipment, test for:</p> <ol style="list-style-type: none">1. Strength<ol style="list-style-type: none">A. ShearB. StressC. CompressionD. Tensile2. Appearance (Pure value judgement)3. Ease of making & application <p>C. Incorporate joints in project drawing.</p> <p>D. Bean bag discussion "Draw parallels between joint breakdown and ecosystem breakdown. (i.e. Poorly constructed or neglected joint breaks down under stress, as ecosystem does when congested, abused or neglected.</p>	<p>II. Outside Resource and Community Activities</p> <p>A. Field trip to local manufacturing plant. Talk with product engineer.</p> <p>B. Forest products lab. evaluate students joint designs.</p>
h de appearance & ction.		

Resource and Reference Materials	Continued and Additional Suggested
<p><u>Publications:</u> <u>Drafting Technical Communication</u> Lawrence S. Wright McKnight & McKnight, Bloomington, Ill., 1968</p> <p><u>Mechanical Drawing</u> French & Svensen McGraw Hill, 1966</p> <p>Audio-Visual: Starley Tools Film Strips Charts Movies</p> <p>Bavi #2666 Design for ARC Welded Structures Bavi #1217 Using Nails and Screws</p> <p><u>Community:</u> Forest Products Laboratory</p>	<p>Continued evaluation of joint se Develop a collection of joints. Conduct a contest for joint stre quality wanted.</p>

ted Reference Materials | Continued and Additional Suggested Learning Experiences

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Communication

Continued evaluation of joint selection.
Develop a collection of joints.
Conduct a contest for joint strength or whatever
quality wanted.

For ARC Welded
ails and Screws
poratory

C 4. An adequate supply of pure
 O
 N water is essential for life.
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Discipline Area Industrial
 Subject Drafting
 Problem Orientation Waste Wa

ESEA Title III - 59-70-0135-2 Project I-C-E	BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES		
	<p>Cognitive: The student will be able to list the types of paper used in drafting. The student will be able to name the paper companies having waste water treatment. Facilities within a 20 mile radius of the school.</p> <p>Affective: The student will appreciate the effect of clean water on recreation, fishing, ect.</p>	<p>I. Student-Centered in class activity</p> <p>A. Students will study types of paper used in drafting.</p> <ol style="list-style-type: none"> 1. Rag 2. Sulphite <p>B. In connection with paper making, student will study water treatment facilities in paper companies.</p> <ol style="list-style-type: none"> 1. Machine used in treatment. 2. Chemicals used in treatment. 3. Short and long term plans for water treatment facilities. <p>C. Develop bulletin board flow charts showing waste water treatment process.</p>	<p>II. Out</p> <p>A. Field</p> <p>B. Publication</p>	
	<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Paper composition 2. How paper is made 3. The treatment of water after it is used in a paper mill. 			

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Discipline Area Industrial Arts

Subject Drafting

Problem Orientation Waste Water Grade 7-12

OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

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- I. Student-Centered in class activity
 - A. Students will study types of paper used in drafting.
 - 1. Rag
 - 2. Sulphite
 - B. In connection with paper making, student will study water treatment facilities in paper companies.
 - 1. Machine used in treatment.
 - 2. Chemicals used in treatment.
 - 3. Short and long term plans for water treatment facilities.
 - C. Develop bulletin board flow charts showing waste water treatment process.

- II. Outside Resource and Community Activities
 - A. Field trip to a paper mill.
 - B. Public relations dept. of a local paper mill.

water
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Resource and Reference Materials	Continued and Additional Suggested Learning Resources
<p data-bbox="361 871 618 901"><u>Publications:</u></p> <p data-bbox="390 901 504 931"><u>Books:</u></p> <p data-bbox="390 931 904 1254"> <u>Pulp and Paper,</u> 500 Howard St. San Francisco, Calif. 94105 <u>American Paper Industry</u> 2570 Devon Avenue DesPlaines, Ill. 60018 <u>Chem Paper Processing</u> Hale Publishing Company One Park Street Stanford, Conn. 06901 </p> <p data-bbox="361 1285 618 1315"><u>Audio-Visual:</u></p> <p data-bbox="390 1315 828 1510"> <u>Recycling Paper</u> Riverside Paper Company Appleton, Wisconsin <u>Great White Trackaway</u> Hammermill Paper Company Erie, Pennsylvania </p> <p data-bbox="361 1540 561 1571"><u>Community:</u></p> <p data-bbox="390 1571 856 1645"> Public Relations Dept. of an area paper mill. </p>	

ear s Continued and Additional Suggested Learning Experiences

C 5. An adequate supply of clean air
 O is essential because most organisms
 N Discipline Area
 C depend on oxygen, through respiration, Subject
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 T to release the energy in their food. Problem Orientat

ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p><u>Cognitive:</u> The student will be able to plan and design a sub-division including adequate vegetation areas.</p> <p><u>Affective:</u> The student will list two or three ways in which vegetation areas promote air quality</p>	<p>I. Student-Centered in class activity</p> <p>A. Teacher will explain and lead discussion on photosynthesis.</p> <p>B. Determine (as a result of discussion) why trees, shrubs, and other greenery are important to clean air</p> <p>C. Have students roughly design sub-division by using plot plans.</p> <p>D. Evaluate sub-divisions of</p> <ol style="list-style-type: none"> 1. Green Areas 2. % of house to lot 3. Privacy area 4. Practicality
<p><u>Skill to be Learned</u></p> <p>A. Plot planning</p> <p>B. Space conservation</p> <p>C. Organic architecture</p>	

the supply of clean air

because most organisms Discipline Area Industrial Arts

through respiration, Subject Drafting - Arch.

energy in their food. Problem Orientation Green Areas Grade 11-12

OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
<p>Student will design including areas.</p> <p>Student will ways in areas pro-</p>	<p>I. Student-Centered in class activity</p> <p>A. Teacher will explain and lead discussion on photosynthesis.</p> <p>B. Determine (as a result of discussion) why trees, shrubs, and other greenery are important to clean air.</p> <p>C. Have students roughly design sub-division by using plot plans.</p> <p>D. Evaluate sub-divisions on:</p> <ol style="list-style-type: none"> 1. Green Areas 2. % of house to lot 3. Privacy area 4. Practicality 	<p>II. Outside Resource and Community Activities</p> <p>A. Presentation by sub-division planner who utilizes vegetation areas.</p> <p>E. Field trip or area study of local sub-divisions to see if studied concepts are actually applied.</p>

Resource and Reference Materials	Continued and Additional Suggested
<p data-bbox="484 912 722 943"><u>Publications:</u></p> <p data-bbox="502 943 964 1037"><u>Architecture Drafting and Design</u>, Herler & Wallach McGraw Hill, 1965</p> <p data-bbox="502 1037 964 1103"><u>Soil Surveys and Land Use Planning</u>, Soil Science Society of America & American Society of Agronomy, 1966</p> <p data-bbox="484 1232 722 1263"><u>Audio-Visual:</u></p> <p data-bbox="502 1263 1033 1328">Bavi #6730 <u>New Guidelines for the Well Landscaped Home.</u></p> <p data-bbox="502 1460 677 1491"><u>Community:</u></p> <p data-bbox="521 1491 939 1521">1. Sub-Division Planner</p>	<p data-bbox="1221 912 1789 1013">1. Have students continue search "Ideal" sub-division in area usage for air quality.</p>

ials Continued and Additional Suggested Learning Experiences

1. Have students continue searching for "Ideal" sub-division in areas of vegetation usage for air quality.

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ESEA Title III -59-7000135-2 Project I-C-E

C O N C E P T

6. Natural resources are not equally distributed over the earth or over time and greatly affect the geographic conditions and quality of life.

Discipline Area Industrial
 Subject Drafting
 Problem Orientation Project

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
<p><u>Cognitive:</u> Each student will be able to efficiently plan projects to use as little natural resources as possible</p> <p><u>Affective:</u> The student will be given guide lines for a specific project and he will choose materials which reflect low waste.</p>	<p>I. Student-Centered in class activity</p> <p>A Design projects that will be of a nature that will help students plan projects to put natural resources to their greatest use-- As little waste as possible</p> <p>Example: Design bird houses from a 4 x 8 plywood sheet.</p> <p>A. Bird house requirement</p> <ol style="list-style-type: none"> 1. Floor size 2. Hole size 3. Hole above floor 4. Bird <p>Design house cutting diagram.</p>	<p>II.</p>
<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> A. Maximum material useage B. Production planning C. Production efficiency 		

resources are not equally

ria er the earth or over Discipline Area Industrial Arts

ng y affect the geo- Subject Drafting

oje ons and quality of Problem Orientation Project Planning Grade 7-12

EX	OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
I. ent will ly plan ttle ossible nt will for a ne will h reflect	I. Student-Centered in class activity A Design projects that will be of a nature that will help students plan projects to put natural resources to their greatest use-- As little waste as possible Example: Design bird houses from a 4 x 8 plywood sheet. A. Bird house requirement 1. Floor size 2. Hole size 3. Hole above floor 4. Bird Design house cutting diagram.	II. Outside Resource and Community Activities A. DNR . Representative B. Forest Products Lab.	
useage ing iency			

Resource and Reference Materials	Continued and Additional Suggested Learning
<p data-bbox="371 948 609 980"><u>Publications:</u></p> <p data-bbox="371 980 947 1110">DNR. Publications <u>Drawing for Product Planning,</u> George E. Stephenson Chas. A. Bennette Co., Inc. 1970</p> <p data-bbox="371 1238 609 1271"><u>Audio-Visual:</u></p> <p data-bbox="371 1503 872 1596"><u>Community:</u> Design engineers from local manufacturer.</p>	<ol data-bbox="1056 948 1797 1050" style="list-style-type: none"> 1. On every project reflect material use 2. Develop a collection of projects which excellent material usage.

Materials	Continued and Additional Suggested Learning Experiences
min use hic g,	<ol style="list-style-type: none">1. On every project reflect material useage.2. Develop a collection of projects which reflect excellent material usage.

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7. Factors such as facilitating transportation, economic conditions, population growth, and increased leisure time have a great influence on changes in land use and centers of population desity.

Discipline Area In
Subject Dr
Problem Orientation

BEHAVICRAL OBJECTIVES

SUGGESTED LEARN

ESEA Title III
159-70-0135-2
Project I-C-E

Cognitive: The student will know how lack of planning years ago is now producing land use problems in his local community.
Affective: The student will list the steps to be taken for better community land use.

I. Student-Centered in class activity
A. Students working in group will produce a slide presentation of good and poor land use in the community
B. Discussion on steps to be taken for better local land use.

Skills to be Learned
How to help in community planning for maximum land usage.
Basic map making & reading of topographical maps.
Use of cameras & tape recorders.

rs such as facilitating

ation, economic conditions, Discipline Area Industrial Arts

Dr n growth, and increased Subject Drafting

ion ime have a great influence Problem Orientation Community Planning Grade 11-12
s in land use and centers
tion desity.

ARN AL OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

he student
lack of plann-
is now pro-
se problems in
munity.
he student
steps to
better
d use.

learned
n community
maximum land

ing & reading
cal maps.
s & tape

- I. Student-Centered in class activity
- A. Students working in groups will produce a slide presentation of good and poor land use in the community.
 - B. Discussion on steps to be taken for better local land use.

- II. Outside Resource and Community Activities
- A. Community Planners make a presentation of future plans for the community.
 - B. Field trip around the community with students taking pictures and recording comments on tape for future presentations.

Resource and Reference Materials	Continued and Additional Suggested Learning Activities
<p><u>Publications:</u> <u>HUD Literature</u> <u>Architecture Drafting and Design</u>, Hepler & Wallach McGraw Hill, 1965 <u>Soil Surveys and Land Use Planning</u>, Soil Science Society of America & American Society of Agronomy, 1966</p> <p><u>Audio-Visual:</u> Student and teachers developed slides.</p> <p><u>Community:</u> City Plan Commission</p>	<p>Develop picture collection of good and poor land use.</p> <p>Conduct a Contest</p> <ol style="list-style-type: none"> 1. Select a real piece of property within the community which presents a problem i.e., gravel pit, swamp. Have students develop a long term solution which reflect best possible use for the community.

Materials	Continued and Additional Suggested Learning Experiences
<p>ing and allach</p> <p>and Use</p> <p>ence & f Agronomy,</p> <p>rs</p> <p>on</p>	<p>Develop picture collection of good and poor land use.</p> <p>Conduct a Contest</p> <ol style="list-style-type: none"> 1. Select a real piece of property within the the community which presents a future problem ie, gravel pit, swamp. Have students develop a long term solutions which will reflect best possible use for the community.

C 8. Cultural, economic, social, and
 O political factors determine status
 N of man's values and attitudes
 C toward his environment.

Discipline Area Indus
 Subject: Draft
 Problem Orientation Ma
 and re-engin

ESLA Title III - 59-70-0135-2 Project I-C-E

BEHAVICRAL OBJECTIVES	SUGGESTED LEARNING
Cognitive: Students will be able to identify objects that are both functional & economic Affective: Students will observe and learn to save materials otherwise used to an excess	I. Student-Centered in class activity A. General concept. Include in the design the idea of the importance of using materials within limits. Usually there is too much material used for a given piece of construction. B. Students in engineering drafting can divide up the parts to save on excess materials. C. Redesign parts to use standard materials to cut down machine time and/or save assembly operations.
<u>Skills to be Learned</u> A. Material useage B. Redesign C. Function	

economic, social, and

Factors determine status

Discipline Area Industrial Arts

Skills and attitudes

Subject: Drafting

Environment.

Problem Orientation Material useage Grade 9-12
and re-engineering

OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

Students will identify objects functionally

Students will design to save material used

Redesign

- I. Student-Centered in class activity
 - A. General concept. Include in the design the idea of the importance of using materials within limits. Usually there is too much material used for a given piece of construction.
 - B. Students in engineering drafting can divide up the parts to save on excess materials.
 - C. Redesign parts to use standard materials to cut down machine time and/or save assembly operations.

- II. Outside Resource and Community Activities
 - A. Product engineer local manufacturer
 - B. Forest Products Lab. (Wood Area)

Resource and Reference Materials

Continued and Additional Suggested Learning Resources

Publications:

Drawing for Product Planning,
George E. Stephenson
Chas. A. Bennett Co., Inc. 1970
Mechanical Drawing, French &
Svensen, Mcraw Hill, 1966

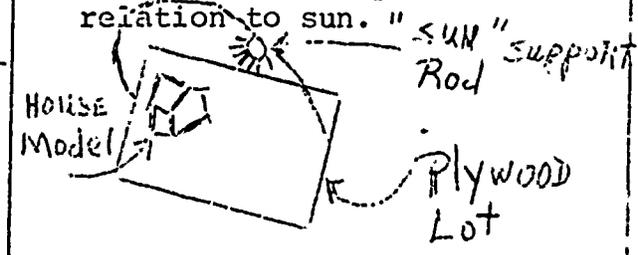
Audio-Visual:
(Metals) BAV I #2666
Design for RC Welded
Structures

Community:
Local Engineer

Le | s | Continued and Additional Suggested Learning Experiences

ESEA Title III - 59-70-0135-2 Project I-C-E

C O N C E P T	9. Man has the ability to manage,	
	manipulate, and change his	Discipline Area <u>Industrial</u>
	environment.	Subject <u>Drafting</u>
		Problem Orientation <u>Sun En Ori</u>

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
<p><u>Cognitive:</u> The student will locate a model home to take fullest advantage of the sun.</p> <p><u>Affective:</u> The student will explain the advantages and values of proper house orientation with the sun.</p> <hr/> <p><u>Skills to be Learned</u></p> <p>A. Placement of a house to use sun energy for heat and light.</p> <p>B. Saving of lighting costs.</p> <p>C. Saving of heating costs.</p> <p>D. Reading plot plans, maps, & azimuth charts.</p>	<p>I. Student-Centered in class activity</p> <p>Note - Model arrangement is used which included room modules to create given house design and home placement in relation to sun. "SUN" Rod Support</p> <div style="text-align: center;">  </div> <p>A. Have class discuss and try various arrangements for desired sun utilization.</p> <p>B. Explain zoning limitations.</p> <p>C. Present and explain azimuth-longitude charts.</p>

manage,

Discipline Area Industrial Arts

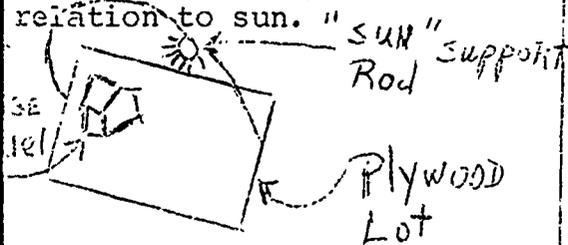
Subject Drafting - Arch.

Problem Orientation Sun Energy & Orientation Grade 11-12

SUGGESTED LEARNING EXPERIENCES

Student-Centered in class activity

Note - Model arrangement is used which included room modules to create given house design and home placement in relation to sun.



II. Outside Resource and Community Activities
Local Architect

- A. Have class discuss and try various arrangements for desired sun utilization.
- B. Explain zoning limitations.
- C. Present and explain azimuth-longitude charts.

Resource and Reference Materials	Continued and Additional Suggested Learning Activities
<p data-bbox="420 892 662 924"><u>Publications:</u></p> <p data-bbox="420 924 986 1017"><u>Architecture Drafting & Design</u> Hepler & Wallach, McGraw Hill, 1965</p> <p data-bbox="420 1117 773 1180"><u>Audio-Visual:</u> Teacher made model.</p> <p data-bbox="420 1412 712 1475"><u>Community:</u> Local Architect.</p>	<p data-bbox="1111 892 1816 985">Have students study their own and neighborhood determine in how many cases the home is situated better.</p>

Materials	Continued and Additional Suggested Learning Experiences
gn 1,	Have students study their own and neighbors' homes to determine in how many cases the home could have been situated better.

C O N C E P T
 10. Short-term economic gains
may produce long-term environmental Discipline Area Indu
losses. Subject Draf
 Problem Orientation P

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p> <u>Cognitive:</u> The student will be able to make a working drawing of a project that fulfills a given set of needs. <u>Affective:</u> The student will be able to analyze a problem. <u>Skills to be learned</u> A. Project planning 1. Problem analysis 2. Problem solving 3. Working drawing 4. Production B. Waste makes waste both time and material </p>	<p> I. Student-Centered in class activity A. Show film strip design in wood 2nd half. B. Have class select project to be designed. C. From class discussion develop list of "needs" 1. Where will it be used. 2. How will it be used. 3. What will it hold. 4. What materials. 5. What machines and/or tools available. 6. How much will it cost. D. Depending on group's ability have groups or individuals solve problem. E. Have class discuss and evaluate results. </p>

ESEA Title III -59-70-0135-2 Project I-C-E

gains

Indu Environmental Discipline Area Industrial Arts

Draf Subject Drafting

on P Problem Orientation Project Planning Grade 7-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

- A. Show film strip design in wood 2nd half.
- B. Have class select project to be designed.
- C. From class discussion develop list of "needs".
 - 1. Where will it be used.
 - 2. How will it be used.
 - 3. What will it hold.
 - 4. What materials.
 - 5. What machines and/or tools available.
 - 6. How much will it cost.
- D. Depending on groups ability have groups or individuals solve problem.
- E. Have class discuss and evaluate results.

II. Outside Resource and Community Activities

- A. Local product engineer
- B. Have students evaluate mass produced items as they differ from individualized items.

Resource and Reference Materials

Continued and Additional Suggested I nu

Publications:

Drawing for Product Planning,
George E. Stephenson, Chas. A.
Bennett Co. 1970

Audio-Visual:

Film strip .
Design in Wood, McGraw-Hill

Community:

ed I nued and Additional Suggested Learning Experiences

C 11. Individual acts, duplicated
 O
 N or compounded, produce significant
 C
 E environmental alterations over time.
 P
 T

Discipline Area Indust
 Subject Drafti
 Problem Orientation Sav
 and and

ESEA Title III - 59-70-0135-2 Project I-C-E	BEHAVIORIAL OBJECTIVES	SUGGESTED LEARNING	
	<p>Cognitive: The student will understand the amount of time and materials necessary to produce a set of house plans. Affective: The student will make use of intermediates to save time and materials.</p>	I. Student-Centered in class activity	II.
<p><u>Skills to be Learned</u> <u>Use of intermediate.</u></p>	<p>A. From a set of house plans, discover how many times the same basic drawing is used. 1. Floor plan 2. Electric plan 3. Heating plan 4. Plumbing plan 5. Joist layout 6. Sub-floor layout 7. Stud layout B. Discussion on quickest way to produce necessary prints. C. Demonstrate: Intermediates 1. Sepia 2. Eraseable sepia 3. Intensifier film 4. Eraseable intensifier film D. Through math calculation find the amount of paper and time saved through the use of an intermediate</p>		

Discipline Area Industrial Arts
 Subject Drafting - Arch.
 Problem Orientation Saving of paper Gradell-12
and time.

SUGGESTED LEARNING EXPERIENCES

II. Entered in class
 set of house plans,
 how many times
 basic drawing is
 plan
 eric plan
 ng plan
 ing plan
 layout
 floor layout
 layout
 on on quickest
 roduce necessary
 ate:
 iates
 able sepia
 ifier film
 ole intensifier
 ath calculation
 amount of paper
 saved through
 f an intermediate

II. Outside Resource and
 Community Activities

Resource and Reference Materials

Continued and Additional Suggest

Publications:

Professional Builder, Sept. 1970
Use of Detailed Layouts to Save
On Site Cost

Audio-Visual:

Various intermediates, produced
by instructor or previous
students.

Community:

rest Continued and Additional Suggested Learning Experiences

C 12. Private ownership must be
 O
 N regarded as a stewardship and should
 C
 E not encroach upon or violate the
 P
 T individual right of others.

Discipline Area
 Subject
 Problem Orientation

ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING ACTIVITIES
<p><u>Cognitive:</u> The student will be able to design a residential dwelling that conforms to local zoning laws. <u>Affective:</u> The student will realize the importance of zoning laws.</p>	<p>I. Student-Centered in class activity A. Presentation and class discussion by a representative of the local zoning committee B. Have students identify zoning laws which will affect their problem C. Students will realize from class discussion and debate how zoning laws protect the rights of others D. Evaluate finished plans in relationship to zoning laws. (local building inspector)</p>
<p><u>Skills to be Learned</u> Zoning laws protect the rights of others</p>	

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and should

Discipline Area Industrial Arts

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Subject Drafting - Arch.

cs.

Problem Orientation Zoning laws Grade 11-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

- A. Presentation and class discussion by a representative of the local zoning committee
- B. Have students identify zoning laws which will affect their problem
- C. Students will realize from class discussion and debate how zoning laws protect the rights of others
- D. Evaluate finished plans in relationship to zoning laws. (local building inspector)

II. Outside Resource and Community Activities

- A. Zoning Committee Rep.
- B. Local Building Inspector

Resource and Reference Materials Continued and Additional

Publications:

General Architectural Drawing,
William E. Wyatt, Chas. Bennett Co.
1969.

Architecture Drafting and
Design, Hepler & McGraw Hill
1965

Soil Surveys and Land Use
Planning, Soil Science
Society of America & American
Society of Agronomy, 1966

Audio-Visual:

Community:

Zoning Commission Representative
Local Building Inspector

Continued and Additional Suggested Learning Experiences

o.

ESEA Title III -59-70-0135-2 Project I-C-F

C 1. Energy from the sun, the basic
 O source of all energy, is converted Discipline Area Industri
 N through plant photosynthesis into Subject Woods
 C a form all living things can use for Problem Orientation How
 P life processes.

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Cognitive: The student will produce a list of 5 conditions which will result in optimum tree growth. Affective: The student will be able to recognize factors which positively and/or negatively affect tree growth and quality.	I. Student-Centered in class activity A. Slide presentation showing trees grown in different situations B. Discussion on presentation 1. Which trees showed greatest growth-why. 2. Why didn't other trees show same progress? a. Density of growth area. b. Tree management, etc. C. Offer actual samples for comparison 1. Densily planted vs. sparsely planted area (shade effects) 2. Growth of pruned tree vs. neglected tree. D. Present: (Outside resource) Strength of lumber in relation to growth conditions. E. Open discussion- tree growth as observed by students.	II.
Skills to be Learned 1. Selective cutting 2. Maximum growth 3. Annual Rings pattern (how related to grain pattern) 4. Proper methods of tree placement in planting for greatest growth.		

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ported Discipline Area Industrial Arts

into Subject Woods

ow ase for Problem Orientation How a tree grows Grade 7-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

- A. Slide presentation showing trees grown in different situations
- B. Discussion on presentation
 - 1. Which trees showed greatest growth-why.
 - 2. Why didn't other trees show same progress?
 - a. Density of growth area.
 - b. Tree management, etc.
- C. Offer actual samples for comparison
 - 1. Densily planted vs. sparsely planted area (shade effects)
 - 2. Growth of pruned tree vs. neglected tree.
- D. Present: (Outside resource) Strength of lumber in relation to growth conditions.
- E. Open discussion- tree growth as observed by students.

II. Outside Resource and Community Activities

- 1. Forester
- 2. Lumber dealer or representative

Resource and Reference Materials	Continued and Add	ce
<u>Publications:</u> <u>Life of The Forest</u> , Jack McCormick McGraw-Hill <u>Woodworking for Industry</u> , John L. Feirer, Chas. A. Bennett Co.	F. Have student growth cond G. Suggest and conditions.	Ja st ne
<u>Audio-Visual:</u> 1. Teacher made slide series 2. Sample collection 3. <u>Paper Makes Wis. Great</u> , Project I-C-E-, Filmstrip, Teachers guide		e Gr lm
<u>Community:</u> Forester Lumber Dealer		

Additional Materials	Continued and Additional Suggested Learning Experiences
Jack McCormick Industry, John L. Bennett Co.	F. Have students inspect own area for tree growth conditions. G. Suggest and carry out methods of improving local conditions.
e series	
Great, filmstrip,	

C 2. All living organisms interact
 O
 N among themselves and their environ- Discipline Area Indust
 C ment, forming an intricate unit called Subject Woods
 P an ecosystem. Problem Orientation Cle

ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING	
<p><u>Cognitive:</u> The student will clean-up when the clean-up period arrives, and not only completed his responsibility but also check overall results against class developed standard..</p> <p><u>Affective:</u> The student will understand all living systems interact among themselves and their environment, realizing clean-up is a combined effort, not an effort by an individual.</p>	<p>I. Student-Centered in class activity</p> <p>A. Let clean-up go for one day</p> <p>B. Allow students to work 2nd day in messy area</p> <p>C. Evaluate on 3rd day the need for clean-up and relate it to the shop production and environment.</p> <p>D. Organize schedule of duties and responsibilities stressing teamwork.</p> <p>E. Discuss and compare results of clean-up vs. no clean-up and discuss group inter-action as it relates to clean-up.</p>	<p>II</p>
<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Co-operation 2. Responsibility 3. Benefits of clean-up <ol style="list-style-type: none"> A. Neater work B. Equipment in proper place. C. Better working atmosphere D. Safer place to work 		

discipline Area Industrial Arts
Subject Woods
Problem Orientation Clean-Up Grade 7-12

ING SUGGESTED LEARNING EXPERIENCES

I. Entered in class
Students go for one
Students to work
in messy area
on 3rd day the
clean-up and
to the shop
on and environ-
schedule of
and responsibilities
g teamwork.
and compare
of clean-up vs.
n-up and discuss
inter-action as it
to clean-up.

- II. Outside Resource and
Community Activities
1. Field trip to local
manufacturing area
to view practical
applications and
advantages of neat-
ness and cleanliness
 2. Presentation by
industrial commission
representative on
safety and production
as related to neat-
ness and teamwork

Resource and Reference Materials	Continued and Additional Suggest
<p data-bbox="563 840 801 871"><u>Publications:</u></p> <p data-bbox="563 871 1011 906"><u>Woodworking for Industry</u> John L. Feirer Chas. A. Bennett Co.</p> <p data-bbox="563 971 1062 1006"><u>Modern Carpentry</u>, Willis H. Wagner, Goodheart-Wilcox</p> <p data-bbox="563 1037 1024 1073"><u>General Shop Woodworking</u>, Fryklund & LaEerge</p> <p data-bbox="563 1104 929 1140">McKnight & McKnight.</p> <p data-bbox="563 1170 801 1201"><u>Audio-Visual:</u></p> <p data-bbox="563 1201 1081 1237"><u>Industrial Arts: A Safe Shop</u> University of Ill.</p> <p data-bbox="563 1470 744 1501"><u>Community:</u></p> <p data-bbox="563 1501 953 1566">Safety Inspector Industrial Commission</p>	<p data-bbox="1229 840 1810 875">1. Develop methods of making cl</p> <p data-bbox="1281 875 1557 911">more efficient.</p> <p data-bbox="1229 911 1810 947">2. Develop list on where else a</p> <p data-bbox="1281 947 1652 982">would be beneficial.</p>

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se a

ued and Additional Suggested Learning Experiences
velop methods of making clean-up responsibility
re efficient.
velop list on where else a team clean-up effort
uld be beneficial.

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3. Environmental factors are limiting
on the numbers of organisms living
within their influence, thus, each
environment has a carrying capacity.

Discipline Area Industrial
 Subject Woods
 Problem Orientation Crowding Shop

ESEA Title III -59-700135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
<p><u>Cognitive:</u> The student will list and explain three physical and three psychological effects of environmental crowding and relate them to specific shop areas.</p> <p><u>Affective:</u> The student will realize that crowding results in adverse physical and psychological conditions.</p>	<p>I. Student-Centered in class activity</p> <p>A. Conduct experiment around following conditions:</p> <ol style="list-style-type: none"> 1. Develop simple task ie, saw off lumber layout and drill 4 holes. 2. Provide only one each of tools required 3. Limit work area to one table. 4. Limit time. 5. Mass production not allowed. 6. First three done win. <p>B. Discuss personal & physical feelings experienced during experiment.</p> <ol style="list-style-type: none"> 1. Low production 2. Confusion 3. Frustration 4. Irritability 5. Waste 6. Injury <p>C. What happens if this happened in town?</p>	<p>II. Out of class activity</p> <ol style="list-style-type: none"> 1. ... 2. ... 3. ...
<p><u>Skills to be Learned</u> <u>Hazards in environmental crowding.</u></p>		

miting

ing Discipline Area Industrial Arts

each Subject Woods

city. Problem Orientation Crowding in the Grade 7-12
Shop

SUGGESTED LEARNING EXPERIENCES

Student-Centered in class
Activity

II. Outside Resource and
Community Activities

1. Conduct experiment
 2. around following con-
ditions:
 3. 1. Develop simple task
ie, saw off lumber
layout and drill 4
holes.
 2. Provide only one
each of tools required
 3. Limit work area to
one table.
 4. Limit time.
 5. Mass production not
allowed.
 6. First three done win.
Discuss personal & physical
feelings experienced during
experiment.
 1. Low production
 2. Confusion
 3. Frustration
 4. Irritability
 5. Waste
 6. Injury
- What happens if this happ-
ened in town?

1. Psychologist
2. Community Planning
Committee.
3. Real Estate Developer

<u>Resource and Reference Materials</u>	<u>Continued and Additional Suggested</u>
<p data-bbox="484 825 731 859"><u>Publications:</u></p> <p data-bbox="484 1150 1059 1289"><u>Audio-Visual:</u> #53525 <u>Man's Effect on The Environment</u>, University of Ill. Champaign, Ill.</p> <p data-bbox="484 1452 1059 1591"><u>Community:</u> 1. Psychologist or Sociologist 2. Community Planning Committee 3. Real Estate Developer</p>	<p data-bbox="1153 825 1789 894">D. Relate results experienced during concept #3.</p>

ted ued and Additional Suggested Learning Experiences
urial ate results experienced during experiment to
cept #3.

C 4. An adequate supply of pure water

O is essential for life.

Discipline Area Indus

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T

Subject Wood

Problem Orientation Co
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ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p><u>Cognitive:</u> The student will be able to list five advantages of planting and cutting to control water run off.</p> <p><u>Affective:</u> The student will understand how to control water run off.</p>	<p>I. Student-Centered in class activity</p> <ol style="list-style-type: none">1. Class discussion centered around film strips and/or locally produced slides, showing difference of water run off on properly cut and planted versus improperly cut and planted.2. Discussion by local forester about how selective cutting can control run off and improve tree stand (possible field trip)3. Follow-up. Run tests of lakes and streams with and without protection of trees and evaluate results. Question: Would reforestation minimize problem?
<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none">1. Selective cutting can control water run off.2. Reforestation practices3. Run-off control minimizes stream pollution	

Discipline Area Industrial Arts
Subject Woodworking
Problem Orientation Control of Water Grade 7-12
Run-Off

SUGGESTED LEARNING EXPERIENCES

Student-Centered in class
Activity
Class discussion centered
around film strips and/or
locally produced slides,
showing difference of water
run off on properly cut
and planted versus improp-
erly cut and planted.
Discussion by local forest-
ranger about how selective cut-
ting can control run off
and improve tree stand
(possible field trip)
Follow-up.
In tests of lakes and
streams with and without
protection of trees and
evaluate results.
Question: Would reforest-
ation minimize problem?

- II. Outside Resource and
Community Activities
1. Planting trees
 2. Helping in selective
cutting
 3. Long term--check on
water quality as
checked by planting
 4. Long term--photo-
graph
 5. Student developed
slide series of
local conditions
 6. Field trip with local
forester

Resource and Reference Materials
Publications:

Continued and additional Suggested Learning

1. Revegetate a stream (under direction of the State Dept.) to control water run-off.
2. Clean out a local stream.

Audio-Visual:

Teacher/student developed
slide series
#01893 Forest Products
University of Ill, Champaign, Ill

Community:

1. DNR
2. ASCS

and additional Suggested Learning Experiences
vegetate a stream (under direction of Conservation
) to control water run-off.
n out a local stream.

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5. An adequate supply of clean air is essential because most organisms depend on oxygen, through respiration, to release the energy in their food.

Discipline Area Indus
Subject Woodw
Problem Orientation R
Clean Air

BEHAVIORAL OBJECTIVES

SUGGESTED LEARNING

Cognitive: The student will be able to list five health hazards due to air pollution in a woodworking shop.
Affective: The student will take preventive measures to stop air pollution when working with wood.

Skills to be Learned
Ways to reduce air pollution in a shop environment.

- I. Student-Centered in class activity
 - A. Dust collection system will not be used for a one day period to show students how dust will collect on projects, clothes, tools and machines.
 - B. During next working period dust collector will be used and students will observe difference in working conditions.
 - C. Student-small group, busy session.

ESEA Title III -59-70-0135-2 Project I-C-E

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Discipline Area Industrial Arts

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Subject Woodworking

n R e the energy
Al

Problem Orientation Relationship of Grade 7-12
Clean Air to Health

NIN

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

A. Dust collection system will not be used for a one day period to show students how dust will collect on projects, clothes, tools and machines.

B. During next working period dust collector will be used and students will observe difference in working conditions.

C. Student-small group, busy session.

II. Outside Resource and Community Activities

Inspector from State Dept. of Labor, Management and Human Relations.

Resource and Reference Materials | Continued and Additional s | al

Publications:

Audio-Visual:

Community:
Local Representative of Dept. of
Labor, Management and Human
Relations.

al s | Continued and Additional Suggested Learning Experiences

of

C O N C E P T

6. Natural resources are not equally distributed over the earth or over time and greatly affect the geographic conditions and quality of life.

Discipline Area Industry

Subject Woods

Problem Orientation Lumber

ESEA Title III -59--70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
<p><u>Cognitive:</u> Student will research, create, and compare itemized cost sheets of lumber 20 years ago, 10 years ago, and the present time. Students will then present their findings to the class via oral report and visual aid.</p> <p><u>Affective:</u> Student will be able to see monetary effect of diminishing resources and resource location in the lumbering industry.</p>	<p>I. Student-Centered in class activity</p> <p>A. Discuss cost sheets</p> <ol style="list-style-type: none"> 1. What is included 2. Format <p>B. Have students compile cost sheets of 20,10, and 1 year ago for a standard article in local area</p> <p>C. Discuss local area cost sheets, comparing cost fluctuations and probable causes over the years.</p> <ol style="list-style-type: none"> 1. Availability 2. Forest management 3. Demand 4. Additional expenses <p>D. Compare and discuss: Local area cost sheets versus cost sheets from other geographical area. (teacher furnished) Discuss reasons for variations.</p> <ol style="list-style-type: none"> 1. Location 2. Transportation 	
<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Cost analysis 2. Timber forest and lumbering locations 3. Graphic illustrations 4. Cause-effect thinking 	<p>(Con't)</p>	

equally

str over Discipline Area Industrial Arts
s Geo- Subject Woods
mbe ty of Problem Orientation Lumber Cost Increases Grade 7-12

SUGGESTED LEARNING EXPERIENCES

- II. Student-Centered in class activity
1. Discuss cost sheets
 1. What is included
 2. Format
 3. Have students compile cost sheets of 20, 10, and 1 year ago for a standard article in local area
 4. Discuss local area cost sheets, comparing cost fluctuations and probable causes over the years.
 1. Availability
 2. Forest management
 3. Demand
 4. Additional expenses
 5. Compare and discuss: Local area cost sheets versus cost sheets from other geographical area. (teacher furnished)
Discuss reasons for variations.
 1. Location
 2. Transportation(Con't)

- II. Outside Resource and Community Activities
1. D.N.R. Representative
 2. Forest manager
 3. Local lumber dealer
 4. Contractor

Resource and Reference Materials	Continued and Additional Suggest
<p><u>Publications:</u> Catalogs from lumber dealers. <u>Woodworking for Industry</u>, John L. Feirer, Chas. A Bennett Co <u>General Shop Woodworking</u>, FryKlund & La Berge, McKnight & McKnight</p>	<p>(Con't from D) 3. Forest management 4. Demand</p>
<p><u>Audio-Visual:</u></p>	
<p><u>Community:</u> Local lumber dealers</p>	

Continued and Additional Suggested Learning Experiences
(Con't from D)

3. Forest management
4. Demand

ett Co
yKluna
ght

C
O
N
C
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P
T

7. Factors such as facilitating

transportation, economic conditions Discipline Area Industrial

population growth, and increased Subject Woodwork

leisure time have a great influence Problem Orientation Leis
on changes in land use and centers
of population density.

	BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING I
ESFA Title III -59-70-0135-2 Project I-C-E	Cognitive: The student will be able to list 10 new businesses and industries created by the do-it-yourself concept. Affective: The student will make better use of his leisure time through the use of do-it-yourself woodworking projects.	I. Student-Centered in class activity A. Students will research how the do-it-yourself leisure activities have changed industries, transportation, and population: centers, by means of:
	Skills to be Learned Efficient use of leisure time. Research.	1. Personal interview-local industrialist, businessmen, etc. 2. Magazine/newspaper reading. 3. Books. 4. A-V materials. 5. Letters of inquiry to various companies. 6. Small-group brainstorming.

Discipline Area Industrial Arts
 Subject Woodworking
 Problem Orientation Leisure Time Grade 9-12

SUGGESTED LEARNING EXPERIENCES

- | | |
|--|--|
| <p>II. Student-Centered in class activity</p> <p>Students will research how the do-it-yourself leisure activities have changed industries, transportation, and population centers, by means of:</p> <ul style="list-style-type: none"> Personal interview-local industrialist, businessmen, etc. Magazine/newspaper reading. Books. A-V materials. Letters of inquiry to various companies. Small-group brainstorming. | <p>II. Outside Resource and Community Activities</p> <ul style="list-style-type: none"> Local building supply dealers. Operators of craft and hobby shops. |
|--|--|

<u>Resource and Reference Materials</u>	<u>Continuation and Additional Suggestions</u>
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Publications:

Do-It-Yourself Encyclopedia

Project plan books

Magazines, Better Homes & Gardens, etc.

Audio-Visual:

Community:

Local building supply dealer.

Local hobby & craft shop

personal.

ued and Additional Suggested Learning Experiences

l, and

ial status Discipline Area Industrial Arts
s Subject Woods
nom Problem Orientation Economic use of Grade 8-12
eri material

EXP SUGGESTED LEARNING EXPERIENCES

. O Student-Centered in class
Co activity

A. A. Class discussion of how
can the material we use
in the shop be used most
economically in the follow-
ing areas:

1. Project design
(Standard Material)
2. Material Layout
(Minimize waste)
3. Reworked material
(Resawing)

B. Bandsaw demonstration

1. Resawing
 - A. Blade width
 - B. Fence
 - C. Feather board
2. Handling resawed mat'rl
 - A. Gluing & clamping
 - B. Surfacing
3. Design alternatives
with resawed mat'rl

II. Outside Resource and
Community Activities

- A. Local shop owners
talk about reusable
material in their
business.
- B. Chamber of Commerce
list of areas businesses
Student evaluate which
produce the "most use-
less" wastes.

Resource and Reference Materials	Continued and Additional Suggested Le
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Publications:

Woodworking for Industry,

John L. Feirer

Chas. A. Bennett Co.

Exploring Woodworking,

Fred W. Zimmerman

Goodheart-Willcox

Audio-Visual:

BAVI #2640 Danish Design

#03230 Man and The Forest, Part 1

#03370 Man and the Forest, Part 2

University of Ill.

and Additional Suggested Learning Experiences

C O N C E P T	9. Man has the ability to manage,	
	manipulate, and change his	Discipline Area In
	environment.	Subject WC
		Problem Orientation

	BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
ESEA Title III -59-70-0135-2 Project I=C-E	<p><u>Cognitive:</u> The student will be able to graph how a tree will produce immensely more under growing conditions manipulated by man.</p> <p><u>Affective:</u> The student will be able to plant, and care for trees in a manner which will produce maximum growth.</p>	<p>I. Student-Centered in class activity</p> <p>A. Presentation by the D.N.I. on how man is manipulating the environment in which a tree grows to produce maximum yield.</p>
	<p><u>Skills to be Learned</u></p> <p>How to produce trees that will yield maximum material in the shortest growing time possible.</p>	

In
Discipline Area Industrial Arts
Wo
Subject Woodworking
tion
Problem Orientation Super Trees Grade 9-12

EAR
3
SUGGESTED LEARNING EXPERIENCES

nt-Centered in class
ity
resentation by the D.N.R.
how man is manipulating
e environment in which
tree grows to prod
ximum yield.

- II. Outside Resource and
Community Activities
- A. field trip to an
area such as the:
1. Seed Orchard
 2. Nicolet National
Forest, East of
Langlade, Wis.
Highway 64.
 3. Tree farms operated
by paper mills
and lumber companies
- B. D.N.R.

Resource and Reference Materials | Continued and Additional Suggest

Publications:

Exploring Woodworking,
Fred W. Zimmerman
Goodheart-Willcox
General Shop Woodworking,
Fryklund & LaBerge
McKnight & McKnight
Woodworking for Industry,
John L. Feirer
Chas. A. Bennett Co.

Audio-Visual:

52386 Conservation in Our
Forest
#01889 Forest Conservation,
University of Ill. Champaign, Ill.

Community:

D.N.R.

Additional Suggested Learning Experiences

A

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T

10. Short-term economic gains may
produce long-term environmental
losses.

Discipline Area Indus
Subject Woods
Problem Orientation

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES

Cognitive: The student will list 10 conditions which effect the quality of a saw log.
Affective: The student will become aware of the adverse effects of cutting for pure profit.

Skills to be learned
Forest management

- A. Selective cutting
- B. Proper pruning or trimming
- C. Use of a crushing stick

SUGGESTED LEARNING

- I. Student-Centered in class activity
 - A. Develop a collection of boards which contain defects which effect the grade of the board
 - 1. Natural defects
 - a. Knots
 - b. Wanes
 - c. Shakes
 - d. Natural holes
 - e. Staining
 - 2. Man made defects
 - a. Splits
 - b. Cracking
 - c. Checking
 - d. Honeycombing
 - e. Caseharding
 - f. Man made holes
 - g. Staining
 - B. Discuss what happened to cause the various defects.
 - C. Were these defects a result of "Rushing?" (Con't)

ns may

Discipline Area Industrial Arts
Subject Woods
Problem Orientation Production of Grade 7-12
quality saw logs

SUGGESTED LEARNING EXPERIENCES

Student-Centered in class activity

- A. Develop a collection of boards which contain defects which effect the grade of the board
 - 1. Natural defects
 - a. Knots
 - b. Wares
 - c. Shakes
 - d. Natural holes
 - e. Staining
 - 2. Man made defects
 - a. Split
 - b. Cracking
 - c. Checking
 - d. Honeycombing
 - e. Caseharding
 - f. Man made holes
 - g. Staining
- B. Discuss what happened to cause the various defects.
- C. Were these defects a result of "Rushing?" (Con't)

II. Outside Resource and Community Activities

Resource and Reference Materials	Continued and Additional Suggest
<p data-bbox="597 864 839 893"><u>Publications:</u></p> <p data-bbox="597 893 1062 932"><u>Woodworking for Industry,</u> John L. Feirer Chas. A. Bennett Co.</p> <p data-bbox="597 932 1011 970"><u>Exploring Woodworking,</u> Fred W. Zimmerman Goodheart-Willcox</p> <p data-bbox="597 970 1062 1009"><u>Cabinetmaking & Millwork,</u> John L. Feirer Chas. A. Bennett Co.</p> <p data-bbox="597 1009 1024 1047"><u>Audio-Visual:</u></p> <p data-bbox="597 1047 991 1086">#81995 <u>Working Forest</u> University of Ill. Teacher developed slide</p> <p data-bbox="597 1086 858 1124"><u>Community:</u></p> <p data-bbox="597 1124 852 1163">Local forester</p>	<p data-bbox="1277 864 1544 902">(Con't from I.)</p> <p data-bbox="1277 902 1816 941">D. How can growing quality be</p> <p data-bbox="1277 941 1816 979">E. Presentation by local fore</p> <p data-bbox="1277 979 1816 1041">F. Develop slide series of w the "quick buck" VS. cut</p>

gged and Additional Suggested Learning Experiences

(t from I.)

How can growing quality be controlled?

Presentation by local forest ranger.

Develop slide series of wood lots--cut for
the "quick buck" VS. cut for management.

C O K C E P T

.1. Individual acts, duplicated
or compounded, produce significant
environmental alterations over
time.

Discipline Area Industrial
Subject Woods
Problem Orientation Material Waste

FSEA Title III -59-70-0135-2 Project I-C-D	BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXP	
	<p><u>Cognitive: The student will select material and work with it in a manner that results in minimum or zero waste.</u> <u>Affective. The student will realize that efficient use and careful workmanship reduces waste and results in savings.</u></p>	<p><u>Skills to be Learned</u> 1. <u>Efficient use of materials</u> 2. <u>Working allowance</u> A. <u>Hand tools</u> B. <u>Machine</u> 3. <u>Multiplied waste</u> 4. <u>Multiplied carelessness. (scrap/rejects)</u></p>	<p>I. Student-Centered in class activity A. Class discussion of working allowance (Poem) "Half an inch longer 'tis we saw Quarter of an inch wider is the law An eighth on thickness is enough Where sawing lumber from the rough." B. Students will lay-out assigned projects on paper representing 4x8 plywood calculate % of waste C. Discuss waste multiplier for both boards versus plywood-- % of rejects D. Students will go to local lumber yard and obtain price lists to realize the amount of money spent for waste.</p>

Discipline Area Industrial Arts

Subject Woods

Problem Orientation Material Use Vs. Waste Grade 7-12

SUGGESTED LEARNING EXPERIENCES

<p>-Centered in class</p> <p>discussion of allowance (Poem)</p> <p>an inch longer 'tis saw</p> <p>er of an inch wider the law</p> <p>ighth on thickness enough</p> <p>sawing lumber the rough."</p> <p>ents will lay-out igned projects on representing plywood calculate waste</p> <p>ass waste multiplier both boards versus ood--% of rejects</p> <p>ents will go to local er yard and obtain e lists to realize amount of money t for waste.</p>	<p>II. Outside Resource and Community Activities</p> <p>A. Quality control engineer</p> <p>B. D.N.R.--wood use</p>
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Resource and Reference Materials

Publications:

Woodworking for Industry,
John L. Feirer
Chas. A. Bennett Co.
Cabinetmaking and Millwork,
John L. Feirer
Chas. A. Bennett Co.
Exploring Woodworking,
Fred W. Zimmerman
Goodheart-Willcox

Audio-Visual:

#50750 American Sawmill
#03230 Man and The Forest
Part 1, University of Ill.

Community:

Quality control engineer
D.K.R.

Continued and Additional Suggest

1. Students will redesign project materials thereby, freeing uses.

Materials	Continued and Additional Suggested Learning Experiences
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|-------------------|---|
| est
obj
g r | <ol style="list-style-type: none">1. Students will redesign projects to use less materials thereby, freeing materials for other uses. |
|-------------------|---|

C 12. Private ownership must be regarded
 O
 N as a stewardship and should not Discipline Area In
 C encroach upon or violate the Subject Wo
 P individual right of others, Problem Orientation

ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p><u>Cognitive:</u> The student will develop and defend a code or law for a given tract of land which reflects "proper" land use. <u>Affective:</u> The student will know how building codes and zoning laws affect and dictate land use.</p>	<p>I. Student-Centered in class activity A. Discuss how building codes & zoning laws dictate land use 1. Land Use (type of area) a. Commercial b. Residential c. Recreational 2. Building placement 3. Building spacing B. Discuss reasons behind building code regulations 1. How do they benefit people? a. Planners b. Builders c. Residents 2. How do they hinder people? a. Planners b. Builders c. Residents C. Discuss correlation between good building codes and zoning laws and good residential environmental and ecological conditions.</p>
<p><u>Skills to be Learned</u> 1. Zoning laws. 2. Building Codes. 3. Proper Land Use.</p>	

regarded

Discipline Area Industrial Arts

Subject Woods - Building Trades

Problem Orientation Building Codes & Grade 9-12
Zoning Laws

SUGGESTED LEARNING EXPERIENCES

Student-Centered in class	II	Outside Resource and Community Activities
Activity		A. Local Govt. official to explain reasoning behind codes & zoning
Discuss how building codes & zoning laws dictate land use		B. Zoning commissioner, town or village official
1. Land Use (type of area)		C. Local building inspector
a. Commercial		D. Architect
b. Residential		E. Local contractor
c. Recreational		F. Safety & sanitation inspector
2. Building placement		G. N.D.R. Representatives and films concerning "before & after development"
3. Building spacing		
Discuss reasons behind building code regulations.		
1. How do they benefit people?		
a. Planners		
b. Builders		
c. Residents		
2. How do they hinder people?		
a. Planners		
b. Builders		
c. Residents		
Discuss correlation between good building codes and zoning laws and good resulting environmental and ecological conditions.		

Resource and Reference Materials	Continued and Additional Suggest
<u>Publications:</u> <u>Modern Carpentry,</u> Willis H. Wagner Goodheart-Willcox <u>Architecture Drafting and Design</u> Hepler & Wallach, McGraw Hill	Develop easy reference chart codes and zoning laws.
<u>Audio-Visual:</u> <u>Small Cities: How They Grow</u> University of Ill.	
<u>Community:</u> All sources listed under "Outside Resources and Community Activities" on reverse side.	

Materials Continued and Additional Suggested Learning Experiences

Develop easy reference chart for basic building codes and zoning laws.

nd Design
Hill

row

community
ide.

C 1. Energy from the sun, the
 O basic source of all energy, is Discipline Area In
 N converted through plant photosyn- Subject He
 C thesis into a form all living things Problem Orientation
 E can use for life processes.

LSEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p><u>Cognitive:</u> The student will be able to explain, in writing, how oxygen is used in the welding and cutting process.</p> <p><u>Affective:</u> The student will understand the use of oxygen in the welding and cutting process.</p>	<p>I. Student-Centered in class activity</p> <p>A. Class discussion on how oxygen is produced in nature through photosynthesis and commercially through electrolysis.</p> <p>B. Experiment showing how a candle will burn in the presence of oxygen and go out as oxygen is used.</p> <p>C. Relate experiment to flame cutting process.</p> <p>D. Develop relation of electrolysis to sun energy</p>
<p><u>Skills to be Learned</u></p> <p>How oxygen is produced.</p> <p>How oxygen is used in the welding process.</p>	

from the sun, the

In of all energy, is

Discipline Area Industrial Arts

through plant photosyn-

Subject Metals

on a form all living things
life processes.

Problem Orientation Oxygen Production Grade 9-12

OBJECTIVES	SUGGESTED LEARNING EXPERIENCES	
Student explain, oxygen welding ss. Student he use welding ss.	I. Student-Centered in class activity A. Class discussion on how oxygen is produced in nature through photosynthesis and commercially through electrolysis. B. Experiment showing how a candle will burn in the presence of oxygen and go out as oxygen is used. C. Relate experiment to flame cutting process. D. Develop relation of electrolysis to sun energy	II. Outside Resource and Community Activities Local welding supply house.
ned duced. d in the		

Resource and Reference Materials	Continued and Additional Suggested Learning
<p data-bbox="409 894 656 917"><u>Publications:</u></p> <p data-bbox="409 917 961 987">Available from welding supply houses for the asking:</p> <p data-bbox="409 987 885 1080"><u>Oxyacetylene Welding and Cutting</u>, Stuart Plumley McGraw Hill</p> <p data-bbox="409 1173 656 1196"><u>Audio-Visual:</u></p> <p data-bbox="409 1196 637 1243">Flame charts</p> <p data-bbox="409 1429 599 1475"><u>Compatibility:</u></p> <p data-bbox="409 1475 971 1545">Rep. from local welding supply house.</p>	

Materials Continued and Additional Suggested Learning Experiences

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ply

C 2. All living organisms interact
 O
 H among themselves and their
 C
 E environment, forming an intricate
 P
 T unit called an ecosystem.

Discipline Area Industrial
 Subject Metals
 Problem Orientation Clear

ESEA Title III -59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES

Cognitive: The student will clean-up when the clean-up period arrives, and not only do his responsibility but also check overall results.
Affective: The student will understand all living systems interact among themselves & their environment realizing clean-up is a combined effort not an effort by an individual.

Skills to be Learned

1. Cooperation
2. Responsibility
3. Benefits of clean-up
 - A. Neater work
 - B. Equip. in proper place.
 - C. Better working atmosphere
 - D. Safer place to work.

SUGGESTED LEARNING EXPERIENCES

- | | |
|---|---|
| <ol style="list-style-type: none"> I. Student-Centered in class activity <ol style="list-style-type: none"> 1. Let clean-up go for one day. 2. Allow students to work next day in messy area. 3. Evaluate on third day the need for clean-up and relate to shop production and environment. 4. Organize schedule of duties and responsibilities stressing teamwork 5. Discuss and compare results of clean-up versus no clean-up and group interaction as related to clean-up. | <ol style="list-style-type: none"> II. |
|---|---|

as interact

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an intricate

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Discipline Area Industrial Arts

Subject Metals

Problem Orientation Clean-up Grade 7-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

1. Let clean-up go for one day.
2. Allow students to work next day in messy area.
3. Evaluate on third day the need for clean-up and relate to shop production and environment.
4. Organize schedule of duties and responsibilities stressing teamwork
5. Discuss and compare results of clean-up versus no clean-up and group interaction as related to clean-up.

II. Outside Resource and Community Activities

1. Field trip to local manufacturing area to view practical applications and advantages of neatness and cleanliness.
2. Presentation by industrial commission representative on safety & production as related to neatness & teamwork.

Resource and Reference Materials	Continued and Additional
<p><u>Publications:</u> <u>Metalwork Technology and Practice</u> Ludwig & McCarthy McKnight & McInight <u>Forging & Welding,</u> Robert E. Smith McKnight & McInight <u>Metalworking,</u> T. Gardner Boyds</p>	<ol style="list-style-type: none"> 1. Develop methods of responsibility mo 2. Develop list of p clean-up effort wo
<p><u>Audio-Visual:</u> <u>Industrial Arts: A Safe Shop,</u> University of Ill.</p>	
<p><u>Community:</u> Safety inspector industrial commission.</p>	

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ued and Additional Suggested Learning Experiences

Develop methods of making clean-up
responsibility more efficient.
Develop list of places where a team
clean-up effort would be beneficial.

C 3. Environmental factors are
 O limiting on the numbers of organisms Dis
 N living within their influence, Sub
 C thus, each environment has a Pro
 E
 P
 T

carrying capacity.

BEHAVIORAL OBJECTIVES

ISEEA Title III --59--70--0135--3 Project I-C-E

Cognitive: The student will list and explain 3 physical and 3 psychological effects of environmental crowding and relate them to specific areas.
Affective: The student will realize that crowding results in adverse physical & psychological conditions.

Skills to be Learned
 Hazards in environmental crowding.

- I. Student-Cent activity
 - 1. Conduct e around fo condition
 - A. Develop ie. sa layout holes
 - B. Provid each o
 - C. Limit one tal
 - D. Limit
 - E. Mass pe allowed
 - F. First win
 - 2. Discuss pe feelings o experiment
 - A. Low pro
 - B. Confus
 - C. Frustra
 - D. Irritab
 - E. Waste
- (Con't)

are

organisms Discipline Area Industrial Arts

Subject Metals

Problem Orientation Crowding in Shop Grade 7-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

1. Conduct experiment around following conditions:
 - A. Develop simple task
ie. saw off stock
layout & drill 4
holes
 - B. Provide only one
each of tools required
 - C. Limit work area to
one table
 - D. Limit time
 - E. Mass production not
allowed
 - F. First three finished
win
2. Discuss personal & physical
feelings experienced during
experiment.
 - A. Low production
 - B. Confusion
 - C. Frustration
 - D. Irritability
 - E. Waste

(Con't)

II. Outside Resource and
Community Activities

1. Psychologist
2. Community planning
committee
3. Real estate developer

ages and Additional Suggested Learning Experiences

I.)
ene pens if this happened in town?

s t crowding
xperienced results to concept #3.

C
O
N
C
E
P
T

4. An adequate supply of
pure water is essential for life.

Discipline Area Industrial
Subject Metals
Problem Orientation Pure Wa
Manufac

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
<p>ESPA Title III --59-70--0135--2 Project I-C-1</p> <p><u>Cognitive:</u> The student will be able to list 5 methods in which waste water is treated in the metals industry.</p> <p><u>Affective:</u> The student will understand how waste water in metal manufacturing is processed to purify it to standards.</p> <p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> How water is used in manufacturing How waste water quality is maintained Water quality standards 	<p>II. Student-Centered in class activity</p> <p>A Field trip to gain knowledge of water use in manufacturing.</p> <p>B Group discussion</p> <ol style="list-style-type: none"> How water used in the manufacture & processing of metals? Is the water "pure" when you are finished with it? (Yes) What is being done to accomplish this? (No) What can be done to accomplish this? Is water recycled thru the process or only used once---why? Is water sent thru local sewage treatment plant? Why-Why not?

Discipline Area Industrial Arts

Subject Metals

Problem Orientation Pure Water & Manufacturing Grade 7-12

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class
Community
A. Field trip to gain knowledge of water use in manufacturing. Group discussion
How water used in the manufacture & processing of metals?
Is the water "pure" when you are finished with it?
(Yes) What is being done to accomplish this?
D. (No) What can be done to accomplish this?
Is water recycled thru the process or only used once---why?
Is water sent thru local sewage treatment plant? Why-Why not?

II. Outside Resource and Community Activities
A. Visit local plants & see how water is used in processing and/or manufacturing of metal.
B. Visit local sewage treatment plant & have engineer explain problems related to treatment of industrial waste.
C. D.M.R. representative
D. Chemistry inst.

Resource and Reference Materials

Publications:

Forging and Welding,
Robert E. Smith
McKnight & McKnight.
Metalwork: Technology & Practice,
Oswald A. Ludwig
McKnight & McKnight

Audio Visual:

Community:

1. D.H.R.
2. Local sewage engineer.
3. Local manufacturer
large quantities of water.

Continued and Additional Suggested Learning

1. Students will write and report on water treatment process. Be prepared to explain effects of water moving through different soils testing the results.
2. Set up a model sediment pond using contrasting soils ie. sand, gravel, Test the purity of the water before piercing thru soil.

learned Additional Suggested Learning Experiences
n wa will write and report on water
o ex t process. Be prepared to explain
t so of water moving different soils &
the results.
ng t model sediment pond using three
el, ing soils ie. sand, gravel, & clay.
ore purity of the water before & after
thru soil.

f clean air

st organisms Discipline Area Industrial Arts

gh respiration, Subject Metals

n their Problem Orientation Dealing With Toxic Grade 9-12
Welding Fumes

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

- A. Demonstrate various welding techniques & observe visible fumes produced.
- B. Discuss where these fumes come from, & what their effect is on an individual. (Guest speaker if desired)
- C. Have member of industrial commission explain how such fumes are dealt with in industry.
- D. Discuss & brainstorm how fumes can be dealt with in the school shop area.

II. Outside Resource and Community Activities

- A. Industrial Commission representative.
- B. School chemistry teacher.
- C. Local welding or metal fabricating person.

Resource and Reference Materials	Continued and Additional Sug
<p data-bbox="609 894 853 929"><u>Publications:</u></p> <p data-bbox="609 917 1228 1092"><u>Forging and Welding, Robert E. Smith, McKnight & McKnight</u> <u>Oxyacetylene Welding and Cutting, Stuart & Plumley</u> McGraw Hill</p> <p data-bbox="609 1185 862 1220"><u>Audio-Visual:</u></p> <p data-bbox="609 1220 1078 1324"><u>Oxyacetylene Welding: Safety and Operations</u> #53445 University of Ill.</p> <p data-bbox="628 1510 816 1545"><u>Community:</u></p> <p data-bbox="628 1545 1106 1684">Industrial Commission Rep. School chemistry teacher Local welder Local welding supplier</p>	

Continued and Additional Suggested Learning Experiences

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6. Natural resources are not
equally distributed over the earth
or over time and greatly affect
the geographic conditions and
quality of life.

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Problem Orientation S

ESEA Title III -59--70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p>Cognitive: The students will be able to identify 5 adverse conditions created by strip mining.</p> <p>Affective: Students will become aware of how strip mining affects geographic conditions.</p>	<p>I. Student-Centered in class activity</p> <p>A. Research the following aspects of strip mining</p> <ol style="list-style-type: none"> 1. Site selection 2. Site development 3. Community involvement 4. Side effects <ol style="list-style-type: none"> a. Physical b. Social c. Mental <p>B. Field trip and/or movie/ film strip/slides to experience how strip mines are being "Re-cycled" for better land use.</p> <p>C. Discuss effects of mining in relationship to community.</p> <ol style="list-style-type: none"> 1. How these materials help us? 2. How present mining techniques destroy natural environment. 3. Possible alternatives and/or improved processes
<p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Ecological management of strip mining. 2. Methods of mining raw ore & its effect on our environment. 	

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Indu & over the earth

Discipline Area Industrial Arts

metal greatly affect

Subject Metals

on S itions and

Problem Orientation Strip mining & its effects Grade 7-12

IVES

SUGGESTED LEARNING EXPERIENCES

ts will

I. Student-Centered in class activity

II. Outside Resource and Community Activities

ated

A. Research the following aspects of strip mining

A. Field trip to open pit and/or strip mine to see mining operations and to question about land reclamation.

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1. Site selection
2. Site development
3. Community involvement
4. Side effects
 - a. Physical
 - b. Social
 - c. Mental.

B. Library research

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nt

B. Field trip and/or movie/ film strip/slides to experience how strip mines are being "Re-cycled" for better land use.

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C. Discuss effects of mining in relationship to community.

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1. How these materials help us?

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2. How present mining techniques destroy natural environment.

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3. Possible alternatives and/or improved processes.

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Resource and Reference Materials

Publications:
Forging and Welding,
Robert E. Smith
McKnight & McKnight
Encyclopedias

Audio-Visual:

Mining for Nickel,
Rothacker Motion Picture
241 W. 17th St., New York, N. Y.
Continuous Excavating,
New Concept in Mining
More, Bigger, Deeper Blast
Hole Drills ; Ideal Pictures
4431 W. North , Milwaukee, Wis.

Community:

1. D.E.R.
2. Local strip mine

Continued and Additional

1. Develop slide series a
"Good vs Bad" strip-mi

al g e Materials

Continued and Additional Suggested Learning Experiences

1. Develop slide series and/or picture set of "Good vs Bad" strip mining.

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ork, N. Y.

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ictures
kee, Wis.

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7. Factors such as facilitating

transportation, economic conditions, Discipline Area I

population growth, and increased Subject

leisure time have a great influence Problem Orientatio
on changes in land use and centers
of population density.

BEHAVIORAL OBJECTIVES

SUGGESTED LEARNING

ESEA Title III -59-70-0135-2 Project I-C-E

Cognitive: The student will be able to list new businesses and industries created by the do-it-yourself concept & more available leisure time.
Affective: The student will make better use of his leisure time through the use of do-it-yourself projects.

Skills to be Learned

1. Efficient use of leisure time.
2. How leisure time effects land use.

- I. Student-Centered in class activity
- A. Students will research how the do-it-yourself & leisure activities have changed industries transportation & population centers.
 - B. Discuss how the sale of RV's have made an impact on the metals industry.
 - C. What role is industrial arts providing in basic skills for the do-it-yourself concept-- specifically in metals area?

such as facilitating

economic conditions, Discipline Area Industrial Arts

growth, and increased

Subject

Metals

have a great influence
land use and centers
density.

Problem Orientation Leisure Time

Grade 7-12

Effects Land Use

OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

Identify

I. Student-Centered in class activity

II. Outside Resource and Community Activities

by

A. Students will research how the do-it-yourself & leisure activities have changed industries, transportation & population centers.

A. Local building supply dealer.

B. Local recreational vehicle dealer, ie

Illustrate

D. Discuss how the sale of RV's have made an impact on the metals industry.

1. Pickups

2. Snowmobiles

Identify

3. Minibikes

Use

4. ATV's

Effect

5. Boats

Effect

C. What role is industrial arts providing in basic skills for the do-it-yourself concept-- specifically in metals area?

Identify

Effect

Effect

Effect

Resource and Reference Materials Continued and Additional Suggeste on

Publications:

Modern Projects in Wood,
Metal and Plastic,
Patrick E. Spielman
Bruce Publishing
Do-It-Yourself Encyclopedias

Audio-Visual:

Community:
Local building supply dealer.
Local recreational vehicle
dealer.

este continued and Additional Suggested Learning Experiences

ESEA Title III 59-70-0135-2 Project I-C-E

8. Cultural, economic, social,
and political factors determine
status of man's values and attitudes
toward his environment.

Discipline Area Indus
 Subject Metals
 Problem Orientation The
 Of

BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING
<p>Cognitive: The students will create a flow chart pointing out the effects & conflicts in cultural, economic, social, & political areas brought about by a metal-industry problem.</p> <p>Affective: The student will realize the cultural, economic, social, & political interactions brought about by a problem in the metal-working industry.</p>	<p>I. Student-Centered in class activity</p> <p>A. Discuss local or widely known pollution problem pertaining to metals industry, ie:</p> <ol style="list-style-type: none"> 1. Water pollution- Lake Superior 2. Noise pollution- Foundry 3. Air pollution - Foundry, steel mill <p>B. Either-</p> <ol style="list-style-type: none"> 1. Have open discussion as to what effects an attempt to clear up a pollution problem has on each aspect of society, ie, Society gets excited, fires up politicians, they chase industry, try to force change. Products prices go up to meet increase, etc. <p style="text-align: center;">-or-</p> <ol style="list-style-type: none"> 2. Organize round table discussion between (con't)
<p>Skills to be learned</p> <ol style="list-style-type: none"> 1. Cause & effect thinking 2. Political processes 3. Economics of change 	

Discipline Area Industrial Arts
 Subject Metals
 Problem Orientation The Ramifications Gradel0-12
 Of Change

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity
 A. Discuss local or widely known pollution problem pertaining to metals industry, ie:
 1. Water pollution-- Lake Superior
 2. Noise pollution-- Foundry
 3. Air pollution - Foundry, steel mill
 D. Either--
 1. Have open discussion as to what effects an attempt to clear up a pollution problem has on each aspect of society, ie, Society gets excited, fires up politicians, they chase industry, try to force change. Products prices go up to meet increase, etc.
 -or-
 2. Organize round table discussion between (con't)

II. Outside Resource and Community Activities
 A. Local economist.
 B. Industrial Commission representative.
 C. Local politician.
 D. Representative of local metal-fabricating industry.

Resource and Reference Materials
Publications:

Audio-Visual:
#03140- Air Pollution
University of Illinois film

Community:
Local economist.
Industrial Commission Rep.
Local politician.
Rep. from local metal working
plant.

Continued and Additional Suggest als

(Con't from I.)
industrial representative, econ
to bring out changes caused by
an industrial pollution problem

gest als Continued and Additional Suggested Learning Experiences

(Con't from I.)

industrial representative, economist, & politician
to bring out changes caused by attempting to solve
an industrial pollution problem.

C O M M U N I C A T I O N
 9. Man has the ability to
 manage, manipulate, and change
 his environment.

Discipline Area Industry
 Subject Metals
 Problem Orientation Foundry
Abatement

ESEA Title III :: 59-70-0135 -2 Project I-C-E

BEHAVIORAL OBJECTIVES

SUGGESTED LEARNING EXPERIENCES

Cognitive: The student will report on two foundries that have installed pollution abatement equipment.
Affective: The students will realize that foundries produce not only castings but also air, water & noise pollution.

- Skills to be Learned
1. Man can manage pollution if he wants to.
 2. Various forms of pollution affect human behavior.
 3. What pollutants are produced by foundries.

- | | |
|---|------------|
| <p>I. Student-Centered in class activity</p> <ol style="list-style-type: none"> A. View movie <u>Iron Product of the Blast Furnace.</u> B. Class discussion: <ol style="list-style-type: none"> 1. What pollutants are produced by a foundry? <ol style="list-style-type: none"> A. Air B. Water C. Noise D. Thermal 2. Are the pollutants an environmental hazard? How? What is being done? What can be done? C. Relate the results of the discussion back to concept #9. | <p>II.</p> |
|---|------------|

change _____
Discipline Area Industrial Arts
Subject Metals
Problem Orientation Foundry Pollution Grade 7-12
Abatement

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class activity

- A. View movie Iron Product of the Blast Furnace.
- B. Class discussion:
 - 1. What pollutants are produced by a foundry?
 - A. Air
 - B. Water
 - C. Noise
 - D. Thermal
 - 2. Are the pollutants an environmental hazard? How? What is being done? What can be done?
- C. Relate the results of the discussion back to concept #9.

II. Outside Resource and Community Activities

- A. Environmental engineer from foundry.
- B. D.N.R.
- C. Local industry rep. in whose company pollution abatement equipment has been installed.

Resource and Reference Materials Continued and Additional Suggest

Publications:

Exploring Patternmaking and Foundry
Miner & Miller
D. VanNostrand Company

1. Develop a collection of local articles which discuss local related pollution problems and their chronological sequence can

Audio-Visual:

#80067 Noise & Health
University of Ill.
#1100 Iron: Product of the
Blast Furnace BAVI

Community:

1. Environmental engineers
2. D.N.R.
3. Local industry rep.

Materials Continued and Additional Suggested Learning Experiences

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lems
can

1. Develop a collection of local newspaper articles which discuss local industry related pollution problems so that a chronological sequence can be followed.

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eers

C 10. Short-term economic gains

O may produce long-term

N environmental losses.

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Subject Metals

Problem Orientation M

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIOEAL OBJECTIVES

SUGGESTED LEARNING

Cognitive: The student will be able to list, the way man's early mining is now costing us money to reclaim the land.

Affective: As an adult, the student will be a concerned citizen about land use, and mining operations.

Skills to be Learned

Land reclamation

I. Student-Centered in class activity

1. Students will view film on ore open pit mining.
2. Students will view slides of old abandoned open pit mines to view how the area is a total waste land.
3. Students will develop plans that could have been used to reclaim the area as it was mined.
4. Students will develop plans that could be used to relaim these areas today.

short-term economic gains

produce long-term

environmental losses.

Discipline Area Industrial Arts

Subject Metals

Problem Orientation Mining Waste Grade 7-12

GENERAL OBJECTIVES

The student
is able to list, the
early mining
bringing us money
and the land.
As an adult,
he will be a
citizen about
mining and mining

What is Learned
Information

SUGGESTED LEARNING EXPERIENCES

I. Student-Centered in class
activity

1. Students will view
film on ore open pit
mining.
2. Students will view slides
of old abandoned open pit
mines to view how the area
is a total waste land.
3. Students will develop plans
that could have been used
to reclaim the area as it
was mined.
4. Students will develop plans
that could be used to
reclaim these areas today.

II. Outside Resource and
Community Activities
Mining companies.
Land developers.

Resource and Reference Materials

Publications:

Encyclopedias

Forging and Welding,

Robert E. Smith

McKnight & McKnight

Audio-Visual:

#51311 Copper Mining

University of Ill.

#1198 Iron Cre Mining BAVI

Community:

Land developer

Continued and Additional Suggested Learning Activities

Materials Continued and Additional Suggested Learning Experiences

VI

C O N C E P T	<u>11. Individual acts, duplicated</u> <u>or compounded, produce significant</u> <u>environmental alterations over</u> <u>time.</u>	Discipline Area <u>Industrial</u> Subject <u>Metals</u> Problem Orientation <u>Alleviate Waste</u>
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	BEHAVIORAL OBJECTIVES	SUGGESTED LEARNING EXPERIENCES
ESEA Title III - 59-70-0135-2 Project I-C-E	<p><u>Cognitive: The student will list 5 places in which cumulative error will lead to waste.</u></p> <p><u>Affective: The student will become aware of a small error multiplying into a large waste.</u></p> <p><u>Skills to be Learned</u></p> <ol style="list-style-type: none"> 1. Accuracy in measurement 2. Economics 3. Multiplication of error 	<ol style="list-style-type: none"> I. Student-Centered in class activity <ol style="list-style-type: none"> A. Basically a general discussion using examples: <ol style="list-style-type: none"> 1. Three classes cutting stock from large piece; if each person cuts his 1/16" long, a full piece or more is wasted before work is started. 2. One person welding without system to exhaust fumes; result is negligible. Many persons welding without exhaust system could be fatal. B. Relate "one instance not too bad, but many instances can be dreadful" Theory to environmental problems, ie: <ol style="list-style-type: none"> 1. Exhaust emission 2. Water pollution 3. Environmental deterioration II. Out...

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Discipline Area Industrial Arts

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Subject Metals

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Problem Orientation Alleviations of Grade 7-12
Waste

EXPERIENCES	SUGGESTED LEARNING EXPERIENCES
• Ou Ac A. B. C. ng	<p>I. Student-Centered in class activity</p> <p>A. Basically a general discussion using examples:</p> <ol style="list-style-type: none">1. Three classes cutting stock from large piece; if each person cuts his 1/16" long, a full piece or more is wasted before work is started.2. One person welding without system to exhaust fumes, result is negligible. Many persons welding without exhaust system could be fatal. <p>B. Relate "one instance not too bad, but many instances can be dreadful" Theory to environmental problems, ie:</p> <ol style="list-style-type: none">1. Exhaust emission2. Water pollution3. Environmental deterioration
ement error	<p>II. Outside Resource and Activities</p> <ol style="list-style-type: none">A. Quality control personnelB. Purchasing agentC. Salvage engineer

Resource and Reference Materials

Publications:

Metalwork Technology and Practice

Ludwig & McCarthy,

McKnight & McKnight

Technical Metals,

Harold V. Johnson

Chas. A. Bennett Co.

Audio-Visual:

Home-made slide series of photo series showing areas or examples of great waste.

Community:

1. Quality control person
2. Purchasing agent
3. Salvage engineer

Continued and Additional Suggested Learning

1. Have students develop easy reference list or bulletin board stating where small wastes should be avoided.
2. Set up "point system" and see what members of class can find most instances of waste in:
 1. School
 2. Local community

Continued and Additional Suggested Learning Experiences

1. Have students develop easy reference list or bulletin board stating where small wastes should be avoided.
2. Set up "point system" and see what member of class can find most instances of waste in
 1. School
 2. Local community

C 12. Private ownership must be
 O
 N regarded as a stewardship and
 C
 E should not enroach upon or violate
 P
 T the individual right of others.

Discipline Area Indust
 Subject Metals
 Problem Orientation My
you

ESEA Title III - 59-70-0135-2 Project I-C-E

BEHAVIORAL OBJECTIVES

Cognitive: The student will list 5 "wastes" & explain how these "wastes" affect others.
Affective: The student will realize that all pollutants & waste violate the rights of others.

Skills to be Learned
 1. Individual acts affect others.
 2. How pollutants are controlled.

SUGGESTED LEARNING

- I. Student-Centered in class activity
- A. Class discussion
 1. Select a few metal-working industries & develop a list of wastes produced.
 2. How do these "wastes" effect others?
 3. Is the effect desirable or undesirable?
 4. What can be done?
 5. What is being done?
 - B. Study thru class developed method, the interaction of "rights".

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upon or violate

ht of others.

Discipline Area Industrial Arts

Subject Metals

Problem Orientation My rights vs. your rights Grade 7-12

IVES

SUGGESTED LEARNING EXPERIENCES

- I. Student-Centered in class activity
 - A. Class discussion
 - 1. Select a few metal-working industries & develop a list of wastes produced.
 - 2. How do these "wastes" effect others?
 - 3. Is the effect desirable or undesirable?
 - 4. What can be done?
 - 5. What is being done?
 - B. Study thru class developed method, the interaction of "rights".

- II. Outside Resource and Community Activities
 - A. Public relations dept. of local manufacturing plant.
 - B. D.N.R.

ect

Resource and Reference Materials.

Publications:

Metalwork Technology and Practice.

Ludwig & McCarthy

McKnight & McKnight

Modern Metalworking,

John R. Walker

Hoodheart-Willcox

Audio-visual:

Community:

1. Public relations man from local manufacturer
2. D.N.R.

Continued and Additional Suggested.

1. Have students research how to handle "encroachment of right

Materials Continued and Additional Suggested Learning Experiences

- Practice.
1. Have students research how local manufacturers handle "encroachment of rights"

PROJECT I-C-E Episode Evaluation Form (Reproduce)

Please fill in:
 Subject: _____
 Grade: _____
 Concept No. Used: _____

In commenting on each episode form. Feel free to adapt it and your critiques and comments - ne hand column, please rate (poor, g make specific comments or suggest vided to help us make this a more

Poor	Good	Exc.	
			I. Behavioral Objectives A. Cognitive:
			P. Affective:
			II. Skills Developed
			III. Suggested Learning Experiences A. In Class:
			B. Outside & Community Activities:
			IV. Suggested Resource & Reference Materials (specific suggestions & comments)

I-C-E Episode Evaluation Form (Reproduce or duplicate as needed)

In commenting on each episode used in your class, please use this form. Feel free to adapt it and add more pages. Let us know all your critiques and comments - negative and positive. In the left-hand column, please rate (poor, good, excellent) each item. Also, make specific comments or suggestions if possible in the space provided to help us make this a more usable guide. Thank you.

Behavioral Objectives

A. Cognitive:

B. Affective:

Skills Developed

Suggested Learning Experiences

A. In Class:

B. Outside & Community Activities:

Suggested Resource & Reference Materials
(specific suggestions & comments)

Project I-C-E
Serving Schools in CESA 3-8-9
1927 Main Street
Green Bay, WI 54301